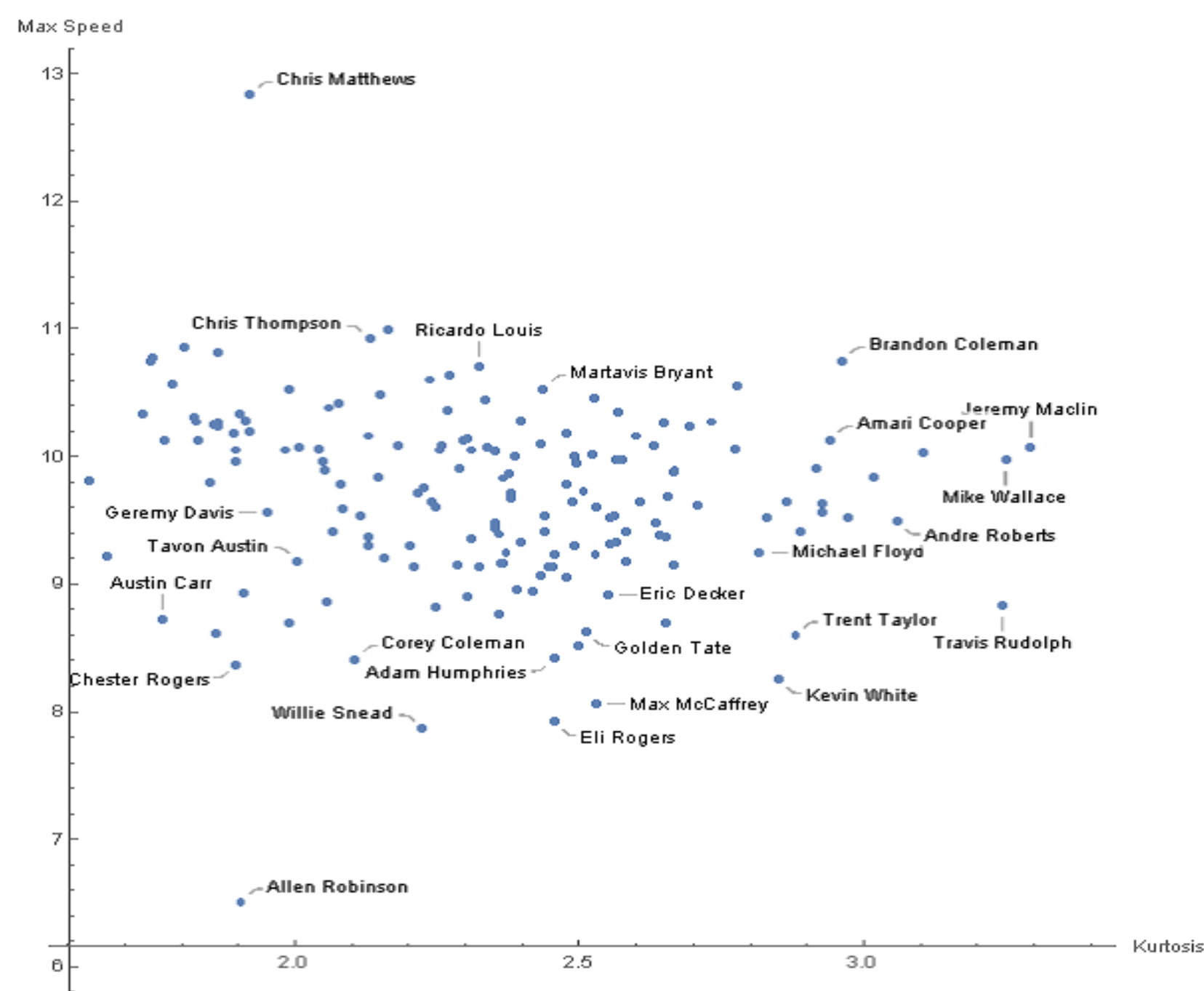




SpeedVision: Maximum-Speed-Weighted Voronoi Diagrams for the NFL

Philip Z. Maymin
Trefz School of Business
University of Bridgeport, Bridgeport, CT

Maximum Speed vs. Speed Kurtosis (Fat Tails)

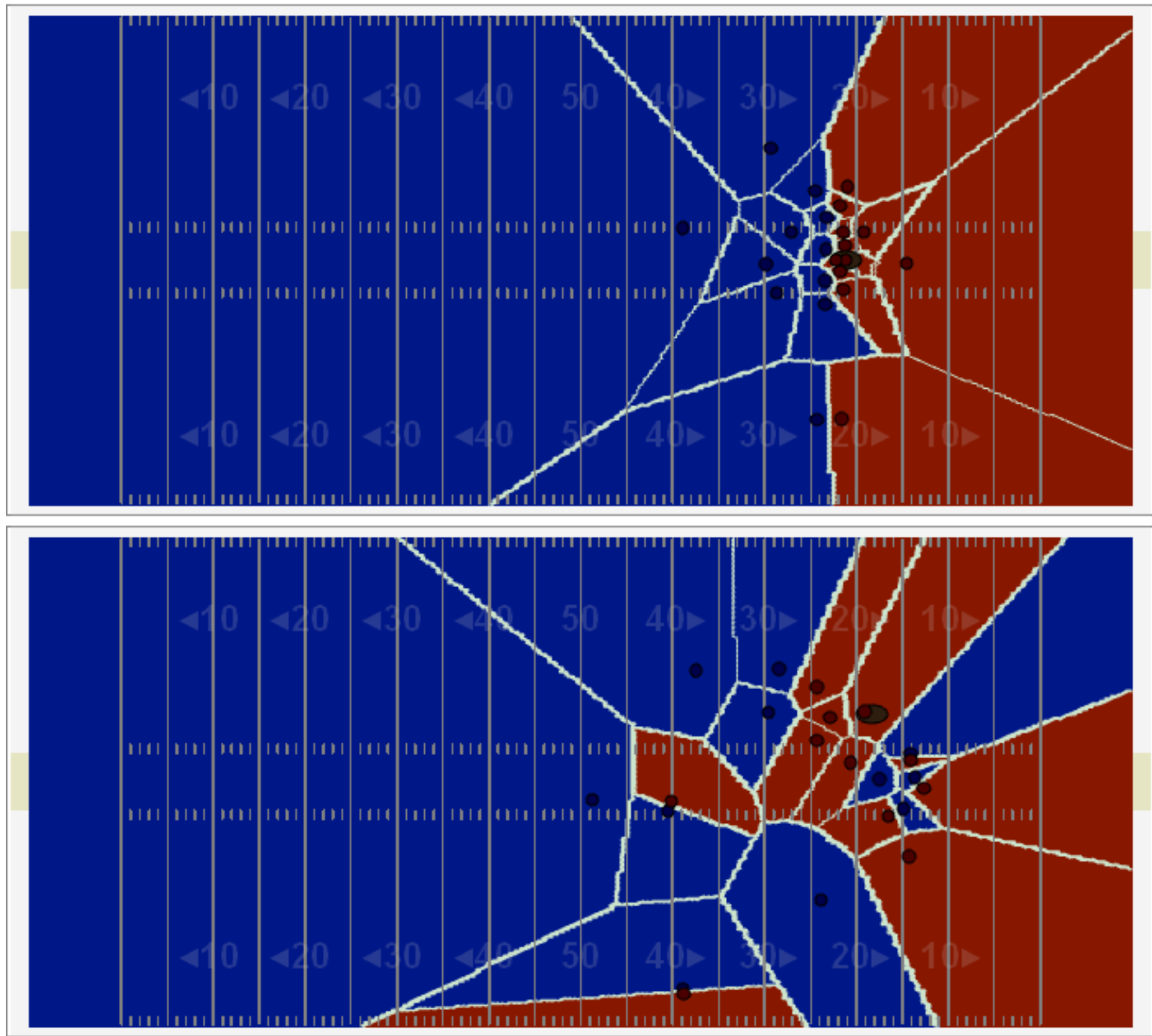


The fastest wide receivers do not necessarily have either more or less extreme observations. For example, the fastest, Chris Matthews, has one of the lower kurtoses in the sample, while the one with the highest kurtosis, Jeremy Maclin, has an approximately average top speed.

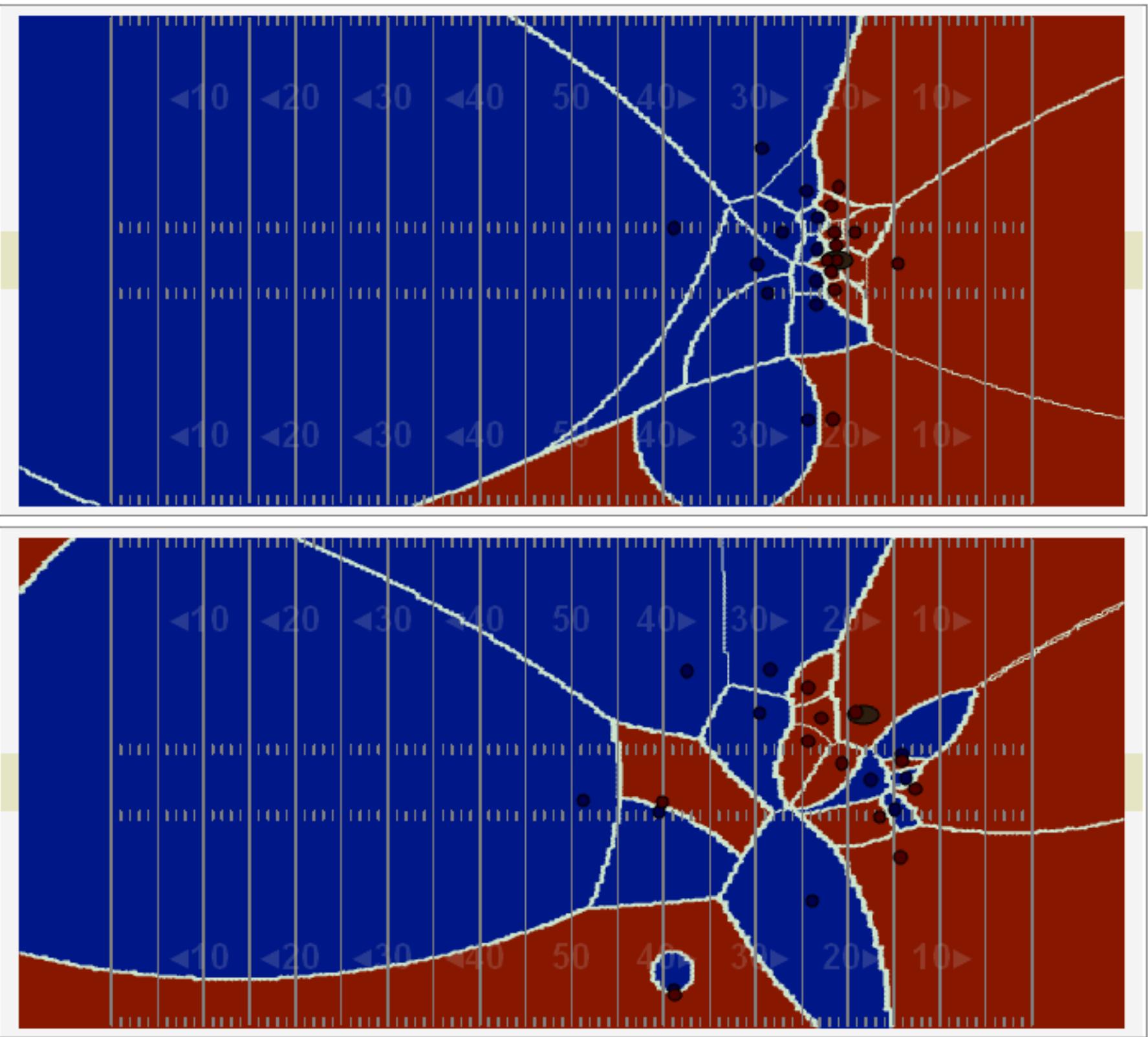
Evaluating the Pass That Was Not Made

Example from the 10/1/2017 Philadelphia Eagles at Los Angeles Chargers game:
(3:47) C.Wentz pass short right to W.Smallwood to LAC 43 for 24 yards (T.Boston).

Standard Voronoi



Multiplicatively-Weighted



The top row shows the situation two seconds into the play, the bottom row five seconds into the play. At the start, the standard Voronoi diagram indicate no passing opportunity, while the weighted Voronoi diagram actually shows that Marcus Johnson controls a triangular area near midfield, if he puts on a burst of speed. Carson Wentz elects to pass back to Wendell Smallwood. From the standard Voronoi diagrams, Wentz’s decision appears reasonable. But from the weighted Voronoi diagrams, it seems like a better opportunity, and possible a touchdown, was overlooked.